

Title (en)

Method, an alignment mark and use of a hard mask material

Title (de)

Verfahren, Ausrichtungsmarkierung und Nutzung eines harten Maskenmaterials

Title (fr)

Procédé, marque d'alignement et utilisation d'un matériel de masque dur

Publication

EP 1912257 A2 20080416 (EN)

Application

EP 07118020 A 20071008

Priority

US 54494806 A 20061010

Abstract (en)

In a method to produce an alignment mark, an oxide layer (1010) and sacrificial layer are processed to comprise recesses. The recesses are filled with a filler material. During filling the recesses a layer of filler material is formed on the sacrificial layer. The layer of filler material is removed by chemical mechanical polishing. The sacrificial layer protects the oxide layer during filling the recesses and removing the layer of filler material. The sacrificial layer is then removed by etching. This provides an unscratched oxide layer with protrusions (1230). The oxide layer with protrusions is covered with a conducting layer (1070) whereby the protrusions punch through the oxide layer to form related protrusions. The related protrusions form an alignment mark.

IPC 8 full level

G03F 9/00 (2006.01); **H01L 23/544** (2006.01)

CPC (source: EP KR US)

G03F 9/708 (2013.01 - EP KR US); **G03F 9/7084** (2013.01 - EP KR US); **H01L 21/3212** (2013.01 - KR); **H01L 23/544** (2013.01 - EP KR US); **H01L 21/3212** (2013.01 - EP US); **H01L 2223/54413** (2013.01 - KR); **H01L 2223/54426** (2013.01 - EP KR US); **H01L 2924/0002** (2013.01 - EP KR US); **Y10S 438/975** (2013.01 - EP KR US)

Cited by

FR2960657A1; US8722506B2; US9156306B2; WO2010073226A3; WO2011151243A1

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR

Designated extension state (EPC)

AL BA HR MK RS

DOCDB simple family (publication)

EP 1912257 A2 20080416; CN 101162368 A 20080416; CN 101162368 B 20110601; JP 2008098634 A 20080424; JP 4555325 B2 20100929; KR 101474876 B1 20141219; KR 20080032615 A 20080415; SG 142234 A1 20080528; TW 200826156 A 20080616; TW I412065 B 20131011; US 2008085599 A1 20080410; US 7550379 B2 20090623

DOCDB simple family (application)

EP 07118020 A 20071008; CN 200710180926 A 20071009; JP 2007259342 A 20071003; KR 20070101434 A 20071009; SG 2007167570 A 20071009; TW 96136883 A 20071002; US 54494806 A 20061010